

Appl. No. 10/715,683
Suppl. Amdt. dated June 23, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-18 (Canceled)

Claim 19 (Previously presented): An electronic assembly comprising:

a substrate having a plurality of conductive signal lines formed adjacent the substrate;

a plurality of resilient electronic interconnection elements coupled to the signal lines,

each interconnection element comprising:

a first structure of a first material having a first spring constant and forming a micro-sized spring, and

a second structure of a different second material deposited within an opening through a masking material applied on the first structure after a portion of the first structure has been released from a substrate and formed into the micro-sized spring, and coupled to the first material, wherein the first material and the second material together have a second spring constant greater than the first spring constant.

Claim 20 (Original): The electronic assembly of claim 19, wherein the shape of each of the plurality of interconnection elements comprises an anchor portion adapted to be coupled to the substrate and a free portion.

Claim 21 (Previously presented): The electronic assembly of claim 20, wherein said free portion comprises a contact tip portion, wherein each said interconnection element further comprises:

an insulating material overlying a portion of the free portion and a conductive material overlying the insulating material and electrically coupled to one of said conductive signal lines.

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Claim 22 (Previously presented): An electronic assembly including a plurality of the interconnection elements, the assembly comprising:

a substrate,

a plurality of signal lines associated with the substrate,

a plurality of the interconnection elements, each interconnection element comprising:

a first structure of a first material having a first spring constant and forming a micro-sized spring, and

a second structure of a different second material deposited within an opening through a masking material applied on the first structure after a portion of the first structure has been released from a substrate and formed into the micro-sized spring, and coupled to the first material, wherein the first material and the second material together have a second spring constant greater than the first spring constant, with selected ones of the plurality of interconnection elements electrically connected to selected ones of the plurality of signal lines.

Claim 23 (Previously presented): An electronic system comprising:

a first electronic component comprising:

a substrate,

a plurality of signal lines associated with the substrate,

a plurality of the interconnection elements, each interconnection element

comprising:

a first structure of a first material having a first spring constant and forming a micro-sized spring, and

a second structure of a different second material deposited within an opening through a masking material applied on the first structure after a portion of the first structure has been released from a substrate and formed into the micro-sized spring, and coupled to the first material, wherein the first material and the second material together have a second spring constant greater than the first spring constant, with selected ones of the plurality of interconnection elements electrically connected to selected ones of the plurality of signal lines; and

a second electronic component connected to the first electronic component.

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Claim 24 (Previously presented): A method of making electrical contact between said electronic assembly of claim 19 and an electronic component, said method comprising:

coupling said resilient electronic interconnection elements of said electronic assembly to contact pads of said electronic component to establish a conductive path paths between said electronic assembly and said electronic component.

Claim 25 (Original): The method of claim 24, wherein the coupling is one of a temporary connection and a permanent connection.

Claim 26 (Previously presented): The method of claim 25, wherein the coupling comprises:
aligning said electronic assembly and said electronic component such that the one or more of the interconnection elements are elastically displaced.

Claims 27-32 (Canceled)

Claim 33 (Previously presented): The electronic system of claim 23, wherein said masking material is a electrophoretic resist.

Claim 34 (Previously presented): The electronic system of claim 23, wherein, the first structure is capable of being free-standing by itself.

Claim 35 (Previously presented): The electronic system of claim 23, wherein said first spring constant is sufficient for repeated elastic displacement of said first structure without substantial plastic deformation of said first structure.

Claim 36 (Previously presented): The electronic assembly of claim 22, wherein said masking material is a electrophoretic resist.

Claim 37 (Previously presented): The electronic assembly of claim 22, wherein, the first structure is capable of being free-standing by itself.

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Claim 38 (Previously presented): The electronic assembly of claim 22, wherein said first spring constant is sufficient for repeated elastic displacement of said first structure without substantial plastic deformation of said first structure.

Claim 39 (Previously presented): The electronic assembly of claim 19, wherein said masking material is a electrophoretic resist.

Claim 40 (Previously presented): The electronic assembly of claim 19, wherein, the first structure is capable of being free-standing by itself.

Claim 41 (Previously presented): The electronic assembly of claim 19, wherein said first spring constant is sufficient for repeated elastic displacement of said first structure without substantial plastic deformation of said first structure.

Claim 42 (New): An electronic assembly including a plurality of the interconnection elements, the assembly comprising:

- a substrate,

- a plurality of signal lines associated with the substrate,

- a plurality of the interconnection elements, each interconnection element comprising:

- a first structure of a first material, and

- a second structure of a different second material deposited within an opening through a masking material applied on the first structure after a portion of the first structure has been released from a substrate and formed into the micro-sized spring, and coupled to the first material,

wherein the second material is one of harder or has different contact properties than the first material, and selected ones of the plurality of interconnection elements are electrically connected to selected ones of the plurality of signal lines.

Claim 43 (New): The electronic assembly of claim 42, wherein the second material harder than the first material.

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Claim 44 (New): The electronic assembly of claim 42, wherein the second material has different contact properties than the first material.

Claim 45 (New): The electronic assembly of claim 42, wherein said masking material is a electrophoretic resist.

Claim 46 (New): The electronic assembly of claim 42, wherein, the first structure is capable of being free-standing by itself.

Claim 47 (New): The electronic assembly of claim 42, wherein the shape of each of the plurality of interconnection elements comprises an anchor portion adapted to be coupled to the substrate and a free portion.

Claim 48 (New): The electronic assembly of claim 47 wherein said free portion comprises a contact tip portion, wherein each said interconnection element further comprises:

an insulating material overlying a portion of the free portion and a conductive material overlying the insulating material and electrically coupled to one of said conductive signal lines.